IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Confirmation No. 6742
Manabu Saikawa, et al.	Examiner: Daniell L. Negron
Application No.: 10/601,266	Technology Center/Art Unit: 2627
Filed: June 19, 2003	AMENDMENT
For: Data storage device and servo information writing method	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed July 25, 2006, please enter the following amendments and remarks:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 7 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1.   (currently amended)   A data storage device comprising:

a disk-shaped storage medium which has a data storage area and a servo area, the data storage area containing a plurality of data tracks which store user information, the servo area containing a plurality of servo tracks which store servo information for identifying positions of the plurality of data tracks;

a ~~hybrid~~ head slider which supports write and read heads, the write head writing user data on the data tracks of the disk-shaped storage medium, the read head reading the user data written on the data tracks; and

a rotary-type actuator which swings the ~~hybrid~~ head slider to position any one of the write and read heads at a target track of the disk-shaped storage medium, ~~wherein a read write offset value is set equivalent to an integer number N of the servo tracks,~~ <u>wherein a pitch of the plurality of servo tracks is varied in the radial direction of the disk-shaped storage medium, and a read write offset value is thereby set equivalent to an integer number N of the servo tracks,</u> the read write offset value being a deviation amount between the write and read heads in a radial direction of the disk-shaped storage medium, the deviation amount being caused by swinging of the ~~hybrid~~ head slider by the rotary-type actuator.

Claim 2.   (currently amended)   The data storage device according to claim 1, wherein ~~a pitch of the plurality of servo tracks is varied in the radial direction of the disk-shaped storage medium, and the read write offset value is thereby set equivalent to the integer number N of the servo tracks~~ <u>the plurality of servo tracks are divided into zones, and the read write offset value is equivalent to a constant number of servo tracks that exist in each zone</u>.

Claim 3.   (original)   The data storage device according to claim 1, wherein the integer number N varies with each predetermined number of the servo tracks.

Claim 4.   (currently amended)   A data storage device comprising:

a disk-shaped storage medium that has a data storage area and a servo area, the data storage area containing a plurality of data tracks that store user information, the servo area containing a plurality of servo tracks that store servo information for identifying positions of the plurality of data tracks;

a head slider that supports write and read heads, the write head writing user data on the data tracks of the disk-shaped storage medium, the read head reading the user data written on the data tracks; and

a rotary-type actuator that swings the head slider to position any one of the write and read heads at a target track of the disk-shaped storage medium, wherein a read write offset value is set equivalent to an integer number N of the servo tracks, the read write offset value being a deviation amount between the write and read heads in a radial direction of the disk-shaped storage medium, the deviation amount being caused by swinging of the head slider by the rotary-type actuator,

~~The data storage device according to claim 3,~~ wherein the integer number N increases stepwise from an inner diameter toward an outer diameter of the disk-shaped storage medium.

Claim 5.   (currently amended) A data storage device comprising:

a disk-shaped storage medium that has a data storage area and a servo area, the data storage area containing a plurality of data tracks that store user information, the servo area containing a plurality of servo tracks that store servo information for identifying positions of the plurality of data tracks;

a head slider that supports write and read heads, the write head writing user data on the data tracks of the disk-shaped storage medium, the read head reading the user data written on the data tracks; and

a rotary-type actuator that swings the head slider to position any one of the write and read heads at a target track of the disk-shaped storage medium, wherein a read write offset value is set equivalent to an integer number N of the servo tracks, the read write offset value being a deviation amount between the write and read heads in a radial direction of the disk-

shaped storage medium, the deviation amount being caused by swinging of the head slider by the rotary-type actuator,

~~The data storage device according to claim 1,~~ wherein the write and read heads are positioned within a region where an error signal obtained from the servo information is linear.

Claim 6.   (currently amended) The data storage device according to claim ~~1~~ 5, wherein the write and read heads are supported by the ~~hybrid~~ head slider while being located at a predetermined center distance from each other in the radial direction of the disk-shaped storage medium.

Claims 7-9.   (canceled)

Claim 10.   (currently amended) A servo information writing method for writing a burst pattern as servo information on a disk-shaped storage medium of a data storage device which has ~~a hybrid head including~~ write and read heads, comprising the steps of:

calculating a read write offset value within a predetermined range on the disk-shaped storage medium, the read write offset value being a deviation amount between the write and read heads in a radial direction of the disk-shaped storage medium; and

writing the burst pattern so that the measured read write offset value is equivalent to an integer number N of servo tracks formed by the burst pattern,

wherein the burst pattern is written so that a pitch of the servo tracks varies at a predetermined variation ratio in the radial direction of the disk-shaped storage medium.

Claim 11.   (currently amended) The servo information writing method according to claim 10, wherein ~~the burst pattern is written so that a pitch of the servo tracks varies at a predetermined variation ratio in the radial direction of the disk-shaped storage medium~~ writing the burst pattern so that the measured read write offset value is equivalent to the integer number N of servo tracks formed by the burst pattern further comprises dividing the servo tracks into zones so that the read write offset value is equivalent to a constant number of servo tracks that exist in each of the zones.

Claim 12.   (currently amended) A servo information writing method for writing a burst pattern as servo information on a disk-shaped storage medium of a data storage device that has write and read heads, comprising the steps of:

calculating a read write offset value within a predetermined range on the disk-shaped storage medium, the read write offset value being a deviation amount between the write and read heads in a radial direction of the disk-shaped storage medium; and

writing the burst pattern so that the measured read write offset value is equivalent to an integer number N of servo tracks formed by the burst pattern,

~~The servo information writing method according to claim 10,~~ wherein a pitch of the servo tracks is varied in relation to a predetermined pitch set as a standard.

Claim 13.   (new) The servo information writing method defined in claim 12 wherein the integer number N increases stepwise from an inner diameter toward an outer diameter of the disk-shaped storage medium.

Claim 14.   (new) The servo information writing method defined in claim 12 wherein the write and read heads are positioned within a region where an error signal obtained from the servo information is linear.

Claim 15.   (new) The servo information writing method defined in claim 12 wherein the servo tracks are divided into zones, and the read write offset value is equivalent to a constant number of servo tracks that exist in each zone.

Claim 16.   (new) The servo information writing method defined in claim 10 wherein the integer number N increases stepwise from an inner diameter toward an outer diameter of the disk-shaped storage medium.

Claim 17.   (new) The servo information writing method defined in claim 10 wherein the write and read heads are positioned within a region where an error signal obtained from the servo information is linear.

Claim 18.   (new)   The servo information writing method defined in claim 10 wherein the servo tracks are divided into zones, and the read write offset value is equivalent to a constant number of servo tracks that exist in each zone.

REMARKS

Claims 1-6 and 10-18 are pending in the present application. Claims 1-2, 4-6, and 10-12 have been amended. New claims 13-18 have been added. No new matter has been added to the new or amended claims. Reconsideration of the claims is respectfully requested in light of the remarks below. Claims 7-9 have been canceled pursuant to a previous restriction requirement.

Allowable Subject Matter

The office action indicated that claims 2, 4, 5, 11, and 12 contain allowable subject matter. Claim 1 has been amended to include the limitations of claim 2. Claims 4 and 5 have been amended to become independent claims. Claim 10 has been amended to include the limitations of claim 11. Claim 12 has been amended to become an independent claim.

It is respectfully submitted that all of the currently pending claims are now in a condition for allowance.

CONCLUSION

Applicant believes of the pending claims are now in a condition for allowance. The Examiner can contact the applicant's representative at 650-242-8300.

Respectfully submitted,

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